

Message Text

UNCLASSIFIED

PAGE 01 OECD P 11451 01 OF 03 200414Z
ACTION OES-06

INFO OCT-01 EUR-12 ISO-00 FEA-01 ACDA-10 CIAE-00
INR-07 IO-13 L-03 NSAE-00 NSC-05 EB-08 NRC-07
DODE-00 OMB-01 TRSE-00 PM-04 H-02 PA-02 PRS-01
SP-02 SS-15 USIA-15 /115 W
-----200421Z 019361 /62

R 191714Z APR 77
FM USMISSION OECD PARIS
TO SECSTATE WASH DC 6194
ERDA WASHDC
GERMANTOWN

UNCLAS SECTION 01 OF 03 OECD PARIS 11451

C O R R E C T E D C O P Y GERMANTOWN-ADDED ADDEE

PASS: STATE FOR PROCHNIK; ERDA FOR TARDIFF, G.W. CUNNINGHAM;
GERMANTOWN FOR YEVICK, BECKJORD

E.O. 11652: N/A
TAGS: OECD, TECH
SUBJECT: THE SUPER PHENIX PROJECT INCLUDING COSTS

1. SUMMARY. DATA ON LMFBR/LWR POWER COSTS AS WELL
AS INFORMATION OF GENERAL AND TECHNICAL INTEREST ARE
REPORTED. THE COST OF THE 1200 MWE SUPER PHENIX
BREEDER REACTOR AS CONTRACTED FOR IS 1 1/3 BILLION
DOLLARS IN CONSTANT MONEY (JANUARY 1977) BUT ACTUAL
COSTS IF ESCALATION IS INCLUDED CAN BE EXPECTED TO BE
IN THE RANGE OF 2 BILLION DOLLARS AT THE COMPLETION
OF CONSTRUCTION IN 1982. POWER GENERATION COSTS FOR
THIS FIRST OF A KIND PLANT WILL BE TWICE LWR COSTS
BUT FUTURE UNITS (AFTER 10 HAVE BEEN CONSTRUCTED) ARE
EXPECTED TO SHOW AN ADVANTAGE AT URANIUM PRICE LEVELS
IN EXCESS OF 25 DOLLARS PER POUND. ALTHOUGH A CON-
STRUCTION PERMIT HAS NOT YET BEEN ISSUED, SITE
UNCLASSIFIED

UNCLASSIFIED

PAGE 02 OECD P 11451 01 OF 03 200414Z

PREPARATION IS COMPLETE AND CONCRETE FOR THE REACTOR
BUILDING HAS ALREADY BEEN POURED TO A LEVEL OF FIFTEEN
FEET. SIGNIFICANT TECHNICAL CHANGES INVOLVING FUEL
CLADDING AND CORE CONFIGURATION ARE UNDER STUDY. THE
LATTER EFFORT COULD LEAD TO STUDIES OF CORES WITH
NON-PROLIFERATION ADVANTAGES. END SUMMARY

2. THE CONTRACT FOR THE SUPER PHENIX NUCLEAR STEAM SUPPLY SYSTEM WAS SIGNED TWO WEEKS AGE BETWEEN THE JOINT EUROPEAN UTILITY, NERSA AND THE FRANCH INDUSTRIAL CONSORTIUM, NOVATOME. THE FOLLOWING INFORMATION ON THE SUPER PHENIX PROJECT HAS BEEN OBTAINED DIRECTLY FROM OFFICIALS AT NERSA. HOWEVER, MUCH OF WHAT IS REPORTED BELOW IS NOT YET IN THE PUBLIC DOMAIN AND CONSEQUENTLY SHOULD BE HANDLED ACCORDINGLY. ALL COSTS ARE GIVEN IN CONSTANT JANUARY 1977 DOLLARS (I.E. WITHOUT ESCALATION). FRENCH FRANCS HAVE BEEN CONVERTED TO U.S. DOLLARS AT THE RATE OF 5 FRANCS TO THE DOLLAR.

3. CAPITAL AND POWER GENERATION COSTS

	SUPER PHENIX	PWR
REACTOR POWER	1200 MWE	900 MWE
CONSTRUCTION PERIOD	70 MONTHS	55 MONTHS
DIRECT COSTS	\$850/KWE	
DIRECT COSTS INCLUDING INTEREST DURING CONSTRUCTION	\$1100/KWE	\$500/KWE
CAPITAL COST BREAKDOWN (PERCENTAGE)		
NUCLEAR STEAM SUPPLY SYSTEM	40	33
UNCLASSIFIED		
UNCLASSIFIED		
PAGE 03 OECD P 11451 01 OF 03 200414Z		
MECHANICAL AND ELECTRICAL EQUIPMENT		
	12	24
CIVIL ENGINEERING (SITE PREP- ARATION AND HYDRAULIC)		
	10	17
BALANCE OF PLANT ARCHITECT- ENGINEERING (INCLUDING NSSS)		
	7	5
INTEREST DURING CONSTRUCTION	26	18
CONTINGENCIES	5	3
POWER GENERATION COSTS	32MILL/KWH	16MILL/KWH
POWER COST BREAKDOWN (PERCENTAGE)		

UNCLASSIFIED

NNN

UNCLASSIFIED

PAGE 01 OECD P 11451 02 OF 03 200413Z
ACTION OES-06

INFO OCT-01 EUR-12 ISO-00 ACDA-10 CIAE-00 INR-07 IO-13
L-03 NSAE-00 NSC-05 EB-08 NRC-07 DODE-00 OMB-01
TRSE-00 PM-04 H-02 PA-02 PRS-01 SP-02 SS-15
USIA-15 FEA-01 /115 W
-----200425Z 019350 /70/44

R 191714Z APR 77
FM USMISSION OECD PARIS
TO SECSTATE WASH DC 6195
ERDA WASHDC
GERMANTOWN

UNCLAS SECTION 02 OF 03 OECD PARIS 11451

C O R R E C T E D C O P Y GERMANTOWN ADDED AS ADDEE

PASS : STATE FOR PROCHNIK; ERDA FOR TARDIFF, G.W. CUNNINGHAM;
GERMANTOWN FOR BECKJORD, YEVICK.

CAPITAL (INCLUDING 10 PERCENT
INTEREST) 64 54

FUEL CYCLE 20 27

OPERATING 16 19

4. AT 1100/KWE THE COST OF THE 1200 MWE SUPER PHENIX
POWER PLANT CALCULATES AS 1 1/3 BILLION DOLLARS IN
CONSTANT MONEY (JANUARY 1977) BUT WHEN ESCALATION
IS INCLUDED, CATUAL COSTS, AT THE COMPLETION OF CON-
STRUCTION IN 1982, CAN BE EXPECTED TO BE IN THE RANGE
OF 2 BILLION DOLLARS.

5. NERSA PERSONNEL HAVE NOT PREPARED PROJECTIONS OF
FUTURE LWR/LMFBR COSTS BUT ARE AWARE OF FRANCH CEA
PROJECTIONS SHOWING A 60 PERCENT LINEAR DECLINE IN
UNCLASSIFIED

UNCLASSIFIED

PAGE 02 OECD P 11451 02 OF 03 200413Z

LMFBR COSTS DURING THE PERIOD BETWEEN 1985 AND 1995. AT THAT TIME, LMFBR CAPITAL COSTS ARE EXPECTED TO BE 20-30 PERCENT GREATER THAN LWR'S. THIS CAPITAL COST DISADVANTAGE WILL BE COMPENSATED FOR BY FUEL SAVINGS. AT A FUEL FABRICATION COST OF \$450 PER POUND # \$100 PER POUND FOR REPROCESSING AND \$96 PER SWU AND AT AN INTEREST RATE OF 10 PERCENT, THE CROSSOVER POINT IN FAVOR OF BREEDERS IS EXPECTED TO OCCUR AT A URANIUM COST OF ABOUT \$25 PER POUND.

6. A CONSTRUCTION PERMIT FOR THE CREYS-MALVILLE SITE, ALTHOUGH EXPECTED SHORTLY, HAS NOT YET BEEN ISSUED. NEVERTHELESS, THE FRENCH UTILITY (EDF) WHICH OWNS THE SITE HAS ALLOWED CONSTRUCTION TO PROCEED. SITE PREPARATION BEGAN IN 1975. CONCRETE FOR THE ALMOST 200 FOOT DIAMETER REACTOR BUILDING HAS NOW REACHED A LEVEL OF 15 FEET. FOUNDATIONS ARE ALMOST COMPLETE FOR THE FOUR STEAM GENERATOR BUILDINGS. CONSTRUCTION OF WATER INTAKE AND DISCHARGE FACILITIES IS IN PROCESS. CONSTRUCTION OF THE COMPONENT FABRICATION AND ASSEMBLY BUILDING WILL BEGIN SHORTLY. REACTOR SODIUM FILLING IS EXPECTED SEPTEMBER 1981; CRITICALLY, MAY 1982; GRID CONNECTION, AUGUST 1982. RATED POWER IS ANTICIPATED BY NOVEMBER 1982, 70 MONTHS AFTER BEGINNING OF CONSTRUCTION.

7. BESIDES THE ABOVE COST AND SCHEDULING DATA INFORMATION OF MORE GENERAL AND TECHNICAL INTEREST IS REPORTED BELOW.

8. PLUTONIUM FOR THE SUPER PHENIX REACTOR WILL BE SUPPLIED BY THE UTILITIES (GOVERNMENTS) PARTICIPATING IN THE PROJECT IN THE RATIO OF THEIR RESPECTIVE SHARES.

9. EDF INTENDS TO PROCEED WITH ORDERS FOR TWIN BREEDER POWER PLANTS (1200-1500 MWE) IN THE EARLY UNCLASSIFIED

UNCLASSIFIED

PAGE 03 OECD P 11451 02 OF 03 200413Z

TO MID-1980'S. ALTHOUGH COOLING TOWERS WILL BE EMPLOYED, THE INITIAL PLANTS WILL BE CONSTRUCTED ON A SITE ADJACENT TO THE SOANE RIVER, NORTH OF LYON.

10 A MAJOR PUBLIC INFORMATION CAMPAIGN IS UNDERWAY IN THE CREYS-MALVILLE AREA. TWENTY THOUSAND COPIES OF A NERSA BI-MONTHLY AS WELL AS OTHER PUBLICATIONS WRITTEN IN LAY TERMS ARE ROUTINELY DISTRIBUTED. THERE IS CONCERN OVER POSSIBLE ADVERSE PUBLIC REACTION TO CANCELLATION OF THE CRBR BY THE U.S. GOVERNMENT.

11. THE NERSA STAFF IS COMPOSED OF SIXTY ENGINEERS

OF THE FOLLOWING NATIONALITIES: 40 FRENCH, 20
ITALIAN, 9 GERMAN AND 1 DUTCH.

12. THE COMPOSITION OF NOVATOME, CURRENTLY 60 PERCENT
CREUSOT-LOIRE AND 40 PERCENT CEA, WILL BE MODIFIED
TO 40 PERCENT CREUSOT-LOIRE, 30 PERCENT CEA, 15 PERCENT
CGE ALSTHOM AND 15 PERCENT NEYRPIC.

13. TITANIUM STABILIZED TYPE-316 STAINLESS STEEL WILL
MOST PROBABLY REPLACE THE CURRENT SUPER PHENIX
REFERENCE CLADDING ALLOY. THE NEW CLADDING MATERIAL
WILL BE EMPLOYED TO PROVIDE ENHANCED SWELLING
RESISTANCE (THE TITANIUM LEVEL IS NOT SUFFICIENT TO
PROVIDE SIGNIFICANT RESISTANCE TO CARBON TRANSFER).

UNCLASSIFIED

NNN

UNCLASSIFIED

PAGE 01 OECD P 11451 03 OF 03 191714Z
ACTION OES-06

INFO OCT-01 EUR-12 ISO-00 ACDA-10 CIAE-00 INR-07 IO-13
L-03 NSAE-00 NSC-05 EB-08 NRC-07 FEAE-00 DODE-00
OMB-01 TRSE-00 PM-04 H-02 PA-02 PRS-01 SP-02
SS-15 USIA-15 /114 W
-----191832Z 010623 /44

R 191714Z APR 77
FM USMISSION OECD PARIS
TO SECSTATE WASH DC 6196
ERDA WASHDC

UNCLAS SECTION 03 OF 03 OECD PARIS 11451

EIGHT SUBASSEMBLIES CONTAINING FUEL CLAD WITH THE NEW
ALLOY ARE UNDERGOING IRRADIATION IN PHENIX. GOAL SUPER
PHENIX BURN-UP OF 70,000 MWD/T IS EXPECTED BY YEAR
END BUT RESULTS THUS FAR HAVE BEEN VERY ENCOURAGING.
A CONTRACT FOR FUEL FABRICATION WILL BE PLACED NEXT
YEAR.

14. THE CEA IS SERIOUSLY STUDYING A HETEROGENEOUS
CORE FOR USE IN FUTURE BREEDER REACTORS, NOT FOR
SAFETY REASONS BUT FOR INCREASED BREEDING RATIO.
(MISSION COMMENT: ALTHOUGH CLEARLY NOT INTENTIONAL,
THE REMOVAL OF THE RADIAL BLANKET MAY BE VIEWED AS

A STEP TOWARDS A HOMOGENEOUS CORE WITH OBVIOUS NON-PROLIFERATION ADVANTAGES. THIS SUBJECT COULD SERVE AS A BASIS OF COOPERATIVE STUDIES INVOLVING THE FRENCH.)

15. CREUSOT-LOIRE WILL MANUFACTURE THE SUPER PHENIX STEAM GENERATORS, ALTHOUGH THE PROTOTYPE WAS BUILT BY FIVES-CAIL BABCOCK. IT IS STILL EXPECTED THAT ALLOY 800 WILL BE EMPLOYED FOR THE STEAM GENERATOR TUBING.
UNCLASSIFIED

UNCLASSIFIED

PAGE 02 OECD P 11451 03 OF 03 191714Z

16. A FINAL DECISION ON THE CONFIGURATION OF THE CORE CATCHER HAS NOT BEEN REACHED. IT WILL DEFINITELY BE INTERNAL TO THE PRIMARY VESSEL AND DESIGNED TO COOL 1/4 OF THE CORE BY NATURAL CONVECTION.

17. THE SUPER PHENIX IHX DESIGN WILL NOT BE CHANGED DESPITE THE CURRENT PROBLEM WITH THE PHENIX UNITS. HOWEVER, THE TROUBLESOME RADIATION SHIELDS WILL BE REMOVED.

18. A GERMAN EMPLOYEE OF NERSA STATED THAT HE AND MANY OF HIS COLLEAGUES NOW BELIEVE THE POOL DESIGN TO BE SUPERIOR TO THE LOOP-TYPE.
TURNER

UNCLASSIFIED

NNN

Message Attributes

Automatic Decaptioning: X
Capture Date: 01-Jan-1994 12:00:00 am
Channel Indicators: n/a
Current Classification: UNCLASSIFIED
Concepts: TECH
Control Number: n/a
Copy: SINGLE
Sent Date: 19-Apr-1977 12:00:00 am
Decaption Date: 01-Jan-1960 12:00:00 am
Decaption Note:
Disposition Action: n/a
Disposition Approved on Date:
Disposition Case Number: n/a
Disposition Comment:
Disposition Date: 01-Jan-1960 12:00:00 am
Disposition Event:
Disposition History: n/a
Disposition Reason:
Disposition Remarks:
Document Number: 1977OECDP11451
Document Source: CORE
Document Unique ID: 00
Drafter: n/a
Enclosure: n/a
Executive Order: N/A
Errors: N/A
Expiration:
Film Number: n/a
Format: TEL
From: OECD PARIS
Handling Restrictions: n/a
Image Path:
ISecure: 1
Legacy Key: link1977/newtext/t19770440/aaaabink.tel
Line Count: 308
Litigation Code IDs:
Litigation Codes:
Litigation History:
Locator: TEXT ON-LINE
Message ID: 47a92aa2-c288-dd11-92da-001cc4696bcc
Office: ACTION OES
Original Classification: UNCLASSIFIED
Original Handling Restrictions: n/a
Original Previous Classification: n/a
Original Previous Handling Restrictions: n/a
Page Count: 6
Previous Channel Indicators: n/a
Previous Classification: n/a
Previous Handling Restrictions: n/a
Reference: n/a
Retention: 0
Review Action: RELEASED, APPROVED
Review Content Flags:
Review Date: 04-Feb-2005 12:00:00 am
Review Event:
Review Exemptions: n/a
Review Media Identifier:
Review Release Date: n/a
Review Release Event: n/a
Review Transfer Date:
Review Withdrawn Fields: n/a
SAS ID: 2757654
Secure: OPEN
Status: NATIVE
Subject: THE SUPER PHENIX PROJECT INCLUDING COSTS
TAGS: OECD
To: SECSTATE WASHDC ERDA WASHDC MULTIPLE
Type: TE
vdkgvwkey: odb://SAS/SAS.dbo.SAS_Docs/47a92aa2-c288-dd11-92da-001cc4696bcc
Review Markings:
Margaret P. Grafeld
Declassified/Released
US Department of State
EO Systematic Review
22 May 2009
Markings: Margaret P. Grafeld Declassified/Released US Department of State EO Systematic Review 22 May 2009